

Why I Like Linux, and Other Tales

Right up front I'll state that I'm just barely getting started in Linux. Linux, for the uninitiated, is an operating system for personal computers that gives you an alternative to Windows or the Macintosh Mac OS. A variant on the Unix operating system, many computer buffs are drawn to its "open architecture," which encourages development and experimentation. I have a lot of learning to do, but I finally am on my way to getting it running full time in my office/shack. For the time being, Windows is my primary "productivity" environment. My fingers have imprinted on them the most common WinWord keystroke shortcuts; after more than ten years of writing with WinWord (beginning with version 1.0) I don't even have to think about these shortcuts.

The way to learn Linux that makes the most sense to me, which is also the method I've advocated and employed, is to have a completely separate PC for Linux. As you learn about Linux, you'll find out about "boot loaders," which allow Linux to coexist on a PC with Windows. When you start your PC, you're given the choice of which environment you want to start. I don't recommend this, however, because older, less capable PCs can be found for so little money and you won't endanger your primary system (you know, the one with financial records, the e-mail address book not duplicated anywhere else, all the photos from your digital camera, etc.).

Fortunately, finding a suitable PC for Linux doesn't take much these days. For example, at an internet auction site I was able to bid successfully on three name-brand PC's that had 166 MHz Pentium processors with reasonable amounts of RAM and hard disks. I think the price was \$130 each. One was purchased to be a Linux box, another a dedicated Windows for Amateur Radio system (including WinAPRS), and the third possibly a web server to be run off my DSL line. That's not to mention the other boxes in my office—a server for my writing work, my main Windows writing work station, and various other boxes being built for test or evaluation.

The solution for keeping all of this PC stuff sane was a device called a KVM Switch—Keyboard, Video, Mouse. It does just what it sounds like. Mine happens to be a Belkin OmniView Pro 8-port unit. There are other manufacturers, and it's unlikely that you'll need eight ports. Four-port units are reasonably priced and will allow you to use your comfortable keyboard (I use old, "very clicky" IBM keyboards, and have several in reserve *if* my current one dies.), your expensive mouse (I actually use a Kensington ExpertMouse trackball.), and best of all, your big monitor (You *do* have a big, ergonomic 17 inch or preferably 19 inch monitor, don't you? If not, shame on you for abusing your eyes. Get one soon, as they are very reasonably priced now.).

When I'm working, my KVM is switched to my primary writing computer. When I'm working APRS or other amateur radio activities, I'm on the ham computer. When I'm trying to "get" Linux, I'm on the Linux box, and best of all, I'm doing it from my good keyboard, trackball, and big monitor, instead of having the clutter of many monitors and keyboards in my office.

OK, so why Linux? Basically, because it's a universal amateur radio software toolkit that will also teach you an incredible amount about internet technologies and networking. For example, APRS is *very* well supported in Linux, with a number of capabilities in APRS that can only be done in Linux and have no counterparts in other environments, mostly because those other environments simply aren't up to the task. One of the most compelling points about Linux to hams is that amateur radio networking devices such as TNCs, PI cards, and a lot of interesting packet radio hardware from Europe all are treated like "just another networking device" in Linux. That means all the support in the operating system (and applications) will (in theory) work equally well over a TNC as a modem. Another point is the incredible array of tools included in Linux. Last, if you ever want to do some of your own programming or scripting to make things happen the way *you* think they should, all that capability is there and is growing daily.

Here are some impressions I've gained from long exposure to Linux, but with very little actual hands-on experience.

- The best Linux distribution for hams is Debian, likely at version 7.0 by the time you read this. I'm told by my Seattle-area brain trust that Debian has the best support for amateur radio devices of all the distributions.

- Get "Linux for Dummies" if you're not the least bit familiar with Linux, and when you're ready to upgrade your instructional material, check out the Linux titles from O'Reilly and Associates (<www.ora.com>).

- There are countless, and growing, web pages about Linux. A good starting point is <www.linux.com>. Doubtless you'll find others.

- Find out if there's a Linux User Group in your area. Such groups often hold periodic "installfests" to help you get Linux on your PC.

- I can recommend *Linux Journal* as a good magazine. It's not a getting-started magazine, but it will grow on you a bit, and they do run articles showing the incredible uses Linux is being put to, including periodic stories about various facets of Linux use in amateur radio. *LJ* is published by Specialized Systems Consultants—SSC (<www.ssc.com>).

I'll feature periodic updates on my Linux experiences in future columns.

TCP/IP Without Tears

True story: On the strength of what I learned using Phil Karn, KA9Q's NET and NOS TCP/IP software for DOS in the late 1980s and early '90s, I qualified for my first Network Administrator job (Yes, they needed someone with TCP/IP experience that badly.). In fact, the things I did on my home amateur radio TCP/IP system were considerably more sophisticated than what I was doing at work.

I never considered that experience "easy." These days it's not very well known that NET and NOS were intended by their original creator to be *routers*—that is, that they were intended to be small and efficient "converters" between amateur radio devices such as TNCs and "real" TCP/IP application software such as Telnet, FTP that were running on "real"

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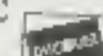
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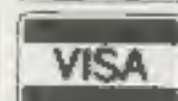
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Wouldn't It Be Cool If...

There was an internet search engine that searched (pretty much) only sites relating to amateur radio? That way you'd have a much greater chance of success at finding the ham-radio-related information you're looking for. But then again, maybe it's already been done. If so, please let me know.

computers—Sun work stations, for example. Somewhere along the line, NOS (which succeeded NET) gained a number of applications and additional services. Some of the applications were intended just to "get things started," the most famous example of which is BM, or Bdale's (Garbee, N3EUA) Mailer, which survives to this day, far, far outliving the originally conceived period of use by the author. More years passed, and more and more "stuff" was added to NOS. And although NOS works well, it's a hard struggle to understand it well enough to make it do useful things.

In 2000, for "server" applications in amateur radio TCP/IP, Linux pretty much wins. Linux is more stable, doesn't have the problems that NOS does with limited memory, and best of all, is far more reliable than NOS typically is (with two or three "extra" things compiled into it).

In 2000, for "client" or "user" applications in amateur radio TCP/IP, Windows 95 or 98 pretty much wins. There's amazing software available for use with TCP/IP—mail programs (no more BM, at least until some smarty ports BM to Windows...), web browsers (which also make dandy FTP clients), news readers, ping utilities, etc. The trouble is that Windows doesn't recognize a TNC or other packet radio hardware as being a network device . . . Oops.

In 2000, TNCs aren't the best devices for higher-level networking. TNCs running KISS was another creation that persists far longer than its creators had ever intended. For one, most of the "intelligence" present in the TNC is ignored in KISS mode. For another, since that "intelligence" isn't used, a simpler device more equivalent to a true modem is better suited to TCP/IP.

In 2000, even though there are a number of radios claiming to be 9600 capable, they are only partially so. The biggest problem is that radios with 9600 capability are expensive. Another is that they have poor turnaround time. It's far better to buy a small, crystal-controlled, low-power radio. The latter are cheap, have fast turnaround time, and you don't feel bad about leaving them in your shack all the time. The best known of this type of small, crystal-controlled

radio is from Tekk, Inc. Other vendors are Motorola (tough to find sometimes) and MFJ.

In my opinion, in 2000 a good amateur radio TCP/IP system consists of the following equipment for the hub of the system:

- A 9600 baud bit regenerative repeater. This allows all the users to hear each other and work each other easily. If you are used to 1200 baud simplex operation, 9600 on a repeater seems like magic.

- A full-time, always-on internet connection with a static IP address (DSL works great) somewhere on the network (doesn't have to be at the hub).

- A Linux server—configured for web server, mailing list, ftp, etc.—ideally located with the hub.

On the client/user side:

- Windows 98, preferably running on a PC dedicated to amateur radio use.

- Tekk/Motorola Radius/MFJ crystal-controlled data radio, crystallized for repeater system mentioned above.

- Yet Another Modem (YAM) for the serial port, available for order at <http://www.microlet.com/yam/>, or the Tigertronics BayPac Model BP-96A available at <http://www.tigertronics.com/bp96.htm>.

- The TCP/IP Win98/NT Driver available from SV2AGW at <http://www.elcom.gr/sv2agw/>.

Of the two modems, I tend to prefer the BP-96A because it is available domestically (few shipping hassles) and I rate it as a bit more stable because it draws its power from the parallel port, from which there is some real power available. The YAM, in contrast, is designed to connect to the serial port, and while this works most of the time, drawing power from a serial port can be problematic at times. Both of these are modems, not TNCs. By themselves, they do nothing. Such modems are ideal for TCP/IP.

Last, the primary creation that hangs all of this together is the SV2AGW TCP/IP Win98/NT Driver. There is a small charge for it, but you can pay by credit card and then download it. Basically, the driver makes the supported amateur radio device into "just another network device" under Windows 98.

Resources

- *Home Power Magazine* <www.homepower.com> does not have very good representation in amateur radio, despite the publishers being hams and mentioning that fact frequently in *HP*. I cannot recommend *HP* highly enough. It is an ongoing education in everything related to generating electricity "off the grid," including heavy emphasis on solar systems and batteries. If you have any interest in powering your shack (or your entire home) with alternative energy, or just want a reliable backup system, *HP* is *great* reading.

- I'll rarely discuss products or services that don't have some connection to amateur radio, but this is one of those exceptions. My current ISP is Speakeasy Networks (<www.speakeasy.net>), headquartered in Seattle, but with DSL service nationwide through Covad. Speakeasy is, in a phrase, "a pretty cool ISP." For one thing, they don't have a problem with you running servers (*per se*) from your DSL line (but don't saturate —read the terms and conditions). For another, they're relatively easy to get additional static IP addresses, which are great for Internet interconnections such as APRS iGates. I've had few problems with Speakeasy, and they seem like nice folks to deal with.

- Last, TAPR's Networking SIG mailing list has been a bit quiet of late. NetSIG never was a high-volume list, but of late there's been virtually no activity. I'm the nominal chairman of TAPR's Networking Special Interest Group (NetSIG) and therefore "in charge" of the NetSIG ML. I've been asked "Where do you hang out?" for extended discussions, and my answer at this point is that I'm on NetSIG. If you'd like more information on NetSIG, browse to <<http://www.tapr.org/tapr/html/sigf.html>>. Feel free to drop me a note there.

Best of all, the SV2AGW software "hooks into" the Windows' TCP/IP stack and "informs" it that the connection is a slow one, and timeout parameters and others should be relaxed.

I saw these pieces (potentially) come together a couple of years ago, but I didn't do much with the idea of combining them. One of those I talked to about the idea was John Ackermann, N8UR, who has begun implementing and documenting this idea in better detail than what I've described here. John's "Cheap (but good...) 9600 baud packet radio" page can be found at <<http://www.febo.com/cheap-9k6/index.html>>. John also maintains a mailing list on this topic called "9k6cheap." Further details are available at <<http://www.febo.com/cgi-bin/majordomo>>.

Thanks...

Thanks for all the nice notes I've received via e-mail. Please write to me with your ideas or comments. I'm particularly interested in hearing from groups that are doing "Advanced/Digital" amateur radio activities not just here in the US, but also internationally.

73, Steve, N8GNJ

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